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SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		12/18/2006	PAPER	

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/692,252	<b>Applicant(s)</b> SMITH, LESLIE	
	<b>Examiner</b> Joshua A. Lohn	<b>Art Unit</b> 2114	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 26 September 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 25-45 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 25-45 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Response to Arguments***

Applicant's arguments filed 9/26/2006 have been fully considered but they are not persuasive.

With respect to applicant's argument, involving the 35 U.S.C. 102(b) rejection of independent claims 25, 34, 35, and 39, that Fulton fails to disclose any logical pipes, let alone two logical pipes, the examiner respectfully disagrees. Applicant's specification defines logical pipes as a logical communication channel. The Fulton reference discloses a first and second logical function, the watching daemon, col. 10, lines 22-25, and libft routine, col. 20, lines 40-43. The communications of these logical functions would act as logical communication pipes providing the transfer of the status and high-availability data as is detailed in the rejection below.

With respect to applicant's arguments, involving newly amended independent claim 30, the examiner respectfully. Fulton inherently discloses the network interface and the various physical and logical pipes as shown in the above discussion and the rejection that follows.

With respect to applicant's arguments, involving independent claims 42 and 44, that Fulton fails to describe monitoring a transfer complete marker, the examiner respectfully disagrees. The wait timer disclosed by Fulton acts as a transfer complete marker. This is shown in the fact that the wait period is set to allow for all processes to be successfully terminated, or completed, col. 21, lines 8-20. Since the wait timer is set at a period that ensures completed processes, the expiration of the timer acts as a transfer complete marker.

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With respect to applicant's arguments, involving the 35, U.S.C. 103(a) rejection, that Futral fails to cure the logical pipe deficiencies in Fulton, the examiner respectfully disagrees that these deficiencies exist, as is shown in the arguments above.

With respect to applicant's arguments, involving the 35, U.S.C. 103(a) rejection, that there is no teaching in Fulton to use Futral's described DMA transfers, the examiner respectfully disagrees. Fulton discloses a desire to transmit memory information between the systems, without giving all the details on how this is to be preformed. The lack of details in operation provides the motivation necessary to combine the teachings of Futral. The invention of Futral provides an efficient transfer mechanism that would improve upon the invention of Fulton by providing more details to allow for successful operation.

### ***Double Patenting***

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 25-29 and 35-45 are rejected on the grounds of nonstatutory obviousness-type double patenting over claims 6-9 of U.S. Patent No. 6,715,099

Claims 25-28 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 6 of the patent. Although the conflicting claims are not identical, they are not patentably distinct from each other because the additional limitation of the instant application involving “the data comprising operational status information allowing a one of the active computer system and the standby computer system to determine a status of another one of the active computer systems and the standby computer system,” is obviously disclosed in claim 6 of the patent in the use of checkpointing data, which is used to exchange status information between computers. Regardless of any additional limitations in claim 6 of the patent, claim 6 of the patent discloses every element of claims 25-28 of the instant application and as such anticipates claims 25-28 of the instant application.

“A later patent claim is not patentably distinct from an earlier patent claim if the later claim is obvious over, or **anticipated by**, the earlier claim. In re Longi, 759 F.2d at 896, 225 USPQ at 651 (affirming a holding of obviousness-type double patenting because the claims at issue were obvious over claims in four prior art patents); In re Berg, 140 F.3d at 1437, 46 USPQ2d at 1233 (Fed. Cir. 1998) (affirming a holding of obviousness-type double patenting where a patent application claim to a genus is anticipated by a patent claim to a species within that genus). “ELI LILLY AND COMPANY v BARR LABORATORIES, INC., United States Court of Appeals for the Federal Circuit, ON PETITION FOR REHEARING EN BANC (DECIDED: May 30, 2001).

Claims 25 and 29 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 7 of the patent. Although the conflicting claims are

not identical, they are not patentably distinct from each other because of the reasons mentioned above in the rejection of claims 25-28.

Claims 35-38 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 6 of the patent. Although the conflicting claims are not identical, they are not patentably distinct from each other because the “physical means for transferring data” in the instant application is obviously disclosed by the physical pipe of claim 6 of the patent, and similarly the first logical means and second logical means are disclosed by the logical pipes of claim 6. Further, the additional limitation of the instant application involving “the data comprising operational status information allowing a one of the active computer system and the standby computer system to determine a status of another one of the active computer systems and the standby computer system,” is obviously disclosed in claim 6 of the patent in the use of checkpointing data, which is used to exchange status information between computers. Regardless of any additional limitations in claim 6 of the patent, claim 6 of the patent discloses every element of claims 35-38 of the instant application and as such anticipates claims 35-38 of the instant application.

Claims 39 and 40 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 6 of the patent. Although the conflicting claims are not identical, they are not patentably distinct from each other because the additional limitation of the instant application involving “transferring operational status information” is obviously disclosed in claim 6 of the patent in the use of checkpointing data, which is used to exchange operational status information between computers. Regardless of any additional limitations in

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claim 6 of the patent, claim 6 of the patent discloses every element of claims 39 and 40 of the instant application and as such anticipates claims 39 and 40 of the instant application.

Claims 39 and 41 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 7 of the patent. Although the conflicting claims are not identical, they are not patentably distinct from each other because of the same reasons mentioned above in the rejection of claims 39 and 40.

Claims 42 and 43 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 8 of the patent. Although the conflicting claims are not identical, they are not patentably distinct from each other because claim 8 of the patent contains every element of claims 42 and 43 of the instant application and as such anticipates claims 42 and 43 of the instant application.

Claims 44 and 45 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 9 of the patent. Although the conflicting claims are not identical, they are not patentably distinct from each other because claim 9 of the patent contains every element of claims 44 and 45 of the instant application and as such anticipates claims 44 and 45 of the instant application.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 25-27, 30, 31, 34-37, 39, 42, and 44 are rejected under 35 U.S.C. 102(b) as being anticipated by Fulton, III et al., United States Patent number 5,715,386, published February 3, 1998.

As per claim 25, Fulton discloses an apparatus for implementing a high-availability computer system architecture, comprising: a physical pipe for transferring data between an active computer system and a standby computer system (Fulton, col. 9, lines 55-58, where the communication links are the physical pipe); a first logical pipe for transferring data over the physical pipe, the data comprising operational status information allowing a one of the active computer system and the standby computer system to determine a status of another one of the active computer system and the standby computer system (Fulton, col. 10, lines 22-25, where the copying of significant memory changes is the transfer of operational status information over the first logical pipe); and a second logical pipe for transferring high-availability data over the physical pipe (Fulton, col. 20, lines 40-43, where the libft routines, saving the state to the remote system, are the transferring of high-availability data over a second logical pipe).

As per claim 26, Fulton further discloses the apparatus in accordance with claim 25, wherein the data transferred between the active computer system and the standby computer system on the first logical pipe comprises checkpointing data (Fulton, col. 10, lines 22-25, where the memory change forwarding is a process of generating checkpointing data).

As per claim 27, Fulton further discloses the apparatus in accordance with claim 25, wherein the high-availability data transferred between the active computer system and the standby computer system on the second logical pipe comprises total system state data of the active computer system (Fulton, col. 19, line 45 through col. 20, line 49, where the total state



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data is saved with the libft commands to provide the necessary data for a complete restarting of the nodes system on another node, according to the rejuvenation).

As per claim 30, Fulton discloses an apparatus for implementing a high-availability computer system architecture, comprising: a physical pipe for transferring data between an active computer system and a standby computer system (Fulton, col. 9, lines 55-58, where the communication links are the physical pipe); and a network interface card (Fulton, col. 9, lines 55-58, where it is inherent that some sort of network interface card exists to allow for the networked communication of these system nodes) implementing a first logical pipe for transferring data over the physical pipe (Fulton, col. 10, lines 22-25, where the copying of significant memory changes by the watching daemon is the transfer of data over the first logical pipe) and a second logical pipe for transferring data and high-availability information over the physical pipe (Fulton, col. 20, lines 40-43, where the libft routines, saving the status to the remote system, are the transferring of high-availability data over a second logical pipe) the data comprising operational status information allowing a one of the active computer system and the standby computer system to determine a status of another one of the active computer system and standby computer system (Fulton, col. 10, lines 22-25, where the copying of significant memory changes is the transfer of operational status information allowing for status determination).

As per claim 31, Fulton further discloses the apparatus in accordance with claim 30, wherein the high-availability information transferred between the active computer system and the standby computer system on the network interface card comprises total system state data of the active computer system (Fulton, col. 19, line 45 through col. 20, line 49, where the total state

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data is saved with the libft commands to provide the necessary data for a complete restarting of the nodes system on another node, according to the rejuvenation).

As per claim 34, Fulton discloses a system for implementing a high-availability computer system architecture, comprising: a physical pipe (Fulton, col. 9, lines 55-58); an active computer system having a network interface card (Fulton, col. 9, lines 55-58, where some form of network interface card is inherent in the ability to communicate between the nodes) for transferring data and high-availability information over a first logical pipe and a second logical pipe, respectively, of the physical pipe, the data comprising operational status information allowing a standby computer system to determine status of the active computer system (Fulton, col. 10, lines 22-25, where the copying of significant memory changes acts to transfer status information over a first logical pipe, and col. 20, lines 40-43, where the libft routines provide for the storing of state information relating to high-availability information of the second logical pipe); and the standby computer system having an interface card (Fulton, col. 9, lines 55-58, where some form of network interface card is inherent in the ability to communicate between the nodes) for receiving the high-availability information from the second logical pipe of the physical pipe (Fulton, col. 20, lines 40-43, where the high-availability information is transferred).

As per claim 35-37, these claims are merely a system for implementing the apparatus of claims 25-27, and as such these claims are rejected under the same grounds as claims 25-27, detailed above. The physical means, first logical means, and second logical means correspond to the physical and logical pipes, and are rejected by the same teachings of Fulton.

As per claim 39, Fulton discloses an apparatus for implementing a high-availability computer system architecture comprising: a physical pipe for transferring data between an active computer system and a standby computer system (Fulton, col. 9, lines 55-58, where the communication links are the physical pipe); a first logical pipe for transferring operational status information over the physical pipe (Fulton, col. 10, lines 22-25, where copying significant memory changes is the transfer of operational status information); and a second logical pipe for transferring total system state data over the physical pipe (Fulton, col. 19, line 45 through col. 20, line 49, where the total state data is saved with the libft commands to provide the necessary data for a complete restarting of the nodes system on another node, according to the rejuvenation).

As per claim 42, Fulton discloses a method in a high-availability computer system having an active computer system and a standby computer system, the method comprising: sending a message to the standby computer system to enter a switch-over state (Fulton, col. 20, lines 12-16); monitoring a transfer complete marker (Fulton, col. 21, lines 15-20, where the termination timer acts as a transfer complete marker for operation); transferring total system state from the active computer system to the standby computer system (Fulton, col. 19, line 45 through col. 20, line 49, where the total state data is saved with the libft commands to provide the necessary data for a complete restarting of the nodes system on another node, according to the rejuvenation); and switching from the active computer system to the standby computer system upon detecting the transfer complete marker (Fulton, col. 20, lines 12-16).

As per claim 44, this is merely a software representation of the method of claim 42. Fulton discloses using a software system for implementation (Fulton, col. 21, lines 52-60), and the remaining limitations are rejected under the same grounds as claim 42, detailed above.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 28, 29, 32, 33, 38, 40, 41, 43, and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fulton in view of Futral et al., United States Patent number 6,081,851, filed December 15, 1997.

As per claim 28, Fulton discloses the transferring of high-availability data utilizing the second logical pipe in accordance with claim 25, however Fulton fails to disclose that the transfer uses remote direct memory access write operations.

Futral discloses making transfers to an I/O system using remote direct memory access write operations (Futral, figure 2, and col. 3, lines 31-37).

It would have been obvious to one skilled in the art at the time of the invention to include the remote direct memory access write operation of Futral in the high-availability transactions of Fulton.

This would have been obvious because Fulton discloses a desire to remotely transmit memory information in the second logical pipe, which is a form of I/O (Fulton, col. 20, lines 40-

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42, where save state information in the memory must be retrieved and transmitted). The remote direct memory access operations of Futral provide a method of performing memory access to and from I/O devices without having to wait on the processor to provide all the stages of the transfer (Futral, col. 3, lines 39-40).

As per claim 29, Fulton, and Futral, which would obviously have been combined for the reasons stated above in the rejection of claim 28, disclose the apparatus in accordance with claim 25, wherein the second logical pipe uses remote direct memory access read operations for transferring high-availability data (Fulton, col. 20, lines 40-42, where the use of the second logical pipe is disclosed, and Futral, col. 3, lines 46-49, where the use of remote direct memory access read operations is disclosed).

As per claim 32, Fulton, and Futral, which would obviously have been combined for the reasons stated above in the rejection of claim 28, disclose the apparatus in accordance with claim 30, wherein the network interface card uses remote direct memory access write operations for transferring high-availability data (Fulton, col. 9, lines 55-58, and col. 20, lines 40-42, where the data transfer is disclosed using a network interface, and Futral, col. 3, lines 31-37, where the use of remote direct memory access write operations is disclosed).

As per claim 33, Fulton, and Futral, which would obviously have been combined for the reasons stated above in the rejection of claim 28, disclose the apparatus in accordance with claim 30, wherein the network interface card uses remote direct memory access read operations for transferring high-availability data (Fulton, col. 9, lines 55-58, and col. 20, lines 40-42, where the

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data transfer is disclosed using a network interface, and Futral, col. 3, lines 46-49, where the use of remote direct memory access read operations is disclosed).

As per claim 38, Fulton, and Futral, which would obviously have been combined for the reasons stated above in the rejection of claim 28, disclose the system in accordance with claim 35, wherein the second logical means uses at least one of a remote direct memory access read operation and a remote direct memory access write operation for transferring high-availability data (Fulton, col. 20, lines 40-42, where the use of the second logical pipe is disclosed, and Futral, col. 3, lines 46-49, where the use of remote direct memory access read operations is disclosed).

As per claim 40, Fulton, and Futral, which would obviously have been combined for the reasons stated above in the rejection of claim 28, disclose the apparatus in accordance with claim 39, wherein the second logical pipe uses a remote direct memory access write operation for transferring high-availability data (Fulton, col. 20, lines 40-42, where the use of the second logical pipe is disclosed, and Futral, col. 3, lines 31-37, where the use of remote direct memory access write operations is disclosed).

As per claim 41, Fulton, and Futral, which would obviously have been combined for the reasons stated above in the rejection of claim 28, disclose the apparatus in accordance with claim 39, wherein the second logical pipe uses a remote direct memory access read operation for transferring high-availability data (Fulton, col. 20, lines 40-42, where the use of the second

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logical pipe is disclosed, and Futral, col. 3, lines 46-49, where the use of remote direct memory access read operations is disclosed).

As per claims 43 and 45, Fulton, and Futral, which would obviously have been combined for the reasons stated above in the rejection of claim 28, disclose the method in accordance with claims 42 and 44, performing at least one of a remote direct memory access read operation and a remote direct memory access write operation for transferring high-availability data (Fulton, col. 20, lines 40-42, where the use of the second logical pipe is disclosed, and Futral, col. 3, lines 46-49, where the use of remote direct memory access read operations is disclosed).

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joshua A. Lohn whose telephone number is (571) 272-3661. The examiner can normally be reached on M-F 8-4.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Scott Baderman can be reached on (571) 272-3644. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JAL

  
SCOTT BADERMAN  
SUPERVISORY PATENT EXAMINER